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2 CLAIMS

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4 1. A method of printing a document containing a printed pattern
5 of position identification pattern markings comprising:
6 providing to a printer a set of print instructions which define the
7 content of a document;
8 generating at the printer a pattern using pattern information that is
9 independent from the print instructions;
10 and printing a document that comprises both the content and the
11 pattern.

12

13 2. The method of claim 1 in which the print instructions include at
14 least one pattern instruction indicating that a pattern is to be added
15 by the printer to the document and the printer adds a pattern to the
16 printed document in response to the at least one pattern instruction.

17

18 3. The method of claim 2 in which the pattern instruction
19 comprises a pattern ID and in which the step of generating the
20 pattern at the printer comprises adding a portion of pattern identified
21 by the ID.

22

23 4. The method of claim 2 in which the pattern instruction
24 comprises an address or an instruction corresponding to an address,
25 and the step of generating the pattern comprises causing the printer
26 to request an appropriate pattern from a server having a network
27 address identified by the pattern instruction.

28

29 5. The method of any preceding claim in which the pattern is
30 allocated to the document at the printer after initiating the
31 transmission of the document instructions to the printer.

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2 6. The method of claim 1 in which a pattern is allocated to the
3 document prior to sending the document to the printer and in which
4 the instructions sent to the printer include a plurality of pattern
5 instructions, each one indicating the location of a pattern marking on
6 the document and in which the printer generates the pattern to be
7 printed by creating the appropriate position indication marking for
8 each location.

9

10 7. The method of claim 6 in which the printer includes a look-up
11 table or library in a memory which stores instructions which tell the
12 printer how to produce a position identification marking for use in
13 creating the pattern.

14

15 8. The method of claim 6 or claim 7 in which the printer includes
16 a raster image processor which receives the print instruction set and
17 is adapted to retrieve a bitmap corresponding to each position
18 indication marking identified by a pattern instruction contained in the
19 print instructions from the library.

20

21 9. The method of any one of claims 6,7 or 8 in which the pattern
22 comprises multiple instances of a single position identification
23 marking provided at locations offset from the intersections of a virtual
24 grid across a portion of the document, and in which the pattern
25 instructions identify the position of each marking relative to the grid.

26

27 10. The method of any one of claims 1 to 9 in which the printer
28 includes a look-up table in a memory which stores a pattern which is
29 sufficient to cover and area larger than the area of a document to be
30 printed and in which the pattern instruction identifies the location of a
31 portion of the stored pattern to be printed on the document.

- 1
- 2 11. The method of any preceding claim in which the printer is
- 3 adapted to produce a bitmap corresponding to the content and a
- 4 bitmap corresponding to the pattern and in which the two bitmaps are
- 5 combined to produce a bitmap for the document to be printed.
- 6
- 7 12. The method of any preceding claim in which the set of
- 8 instructions generated at the host device comprise printer job
- 9 language (PJL) instructions indicating that a pattern is to be included
- 10 and/or instructions in a page description language defining the
- 11 content.
- 12
- 13 13. The method of any preceding claim in which the printer is
- 14 arranged to add a different pattern to each copy of a document that it
- 15 prints from a set of print instructions.
- 16
- 17 14. Apparatus for printing a document containing position
- 18 identification pattern markings, the apparatus including a printer
- 19 having an interpreting means arranged to create the pattern to be
- 20 printed in response to receipt of a set of print instructions, the print
- 21 instructions defining the content of the document using pattern
- 22 information that is separate from the print instructions.
- 23
- 24 15. The apparatus of claim 14 in which the printer comprises a part
- 25 of a photocopier and in which the print instructions comprise an
- 26 electronic version of an original document which is captured by a
- 27 scanner of the photocopier.
- 28
- 29 16. The apparatus of claim 14 in which the print instructions
- 30 include at least one pattern instruction indicating that a pattern is to
- 31 be printed on the document

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2 17. The apparatus of claim 14,15 or 16 further comprising:
3 a printing application stored on a host device which is arranged to
4 receive a file defining the content of the document and to generate a
5 set of print instructions which comprise instructions that define the
6 content of the document to be printed and at least one pattern
7 instruction which indicates that a pattern is to be included in the
8 printed documents.

9
10 18. The system of claim 17 in which the interpreting means
11 comprises a raster image processor and in which the print
12 instructions produced by the host device are in a page description
13 and/or print job language.

14
15 19. The system of claim 16 in which the pattern instruction in the
16 print instruction set comprises a PJL command and in which the RIP
17 is provided with a function which is called by the PJL command.

18
19 20. The system of claim 16 in which the pattern instruction
20 comprises a network address and in which the printer includes a
21 network connection to a processor identified by the network address,
22 pattern request means for requesting pattern from the processor, and
23 pattern receiving means for receiving from the processor an
24 appropriate pattern in response to the pattern request.

25
26 21. The system of claim 20 in which the pattern requesting and
27 receiving means comprises program instructions stored in a memory
28 of the processor which are executed whenever the RIP processes a
29 pattern instruction in a print instruction set.

30

1 22. A printer for printing a document which includes a pattern of
2 position identification markings which includes:
3 means for receiving a print file containing a set of print instructions
4 for the printing of a document, and means for creating the required
5 pattern in response to at least one pattern instruction contained in
6 the print file using pattern information that is obtained independently
7 from the print file.

8

9 23. The printer of claim 22 in which the print instructions include at
10 least one print instruction that comprises a pattern ID.

11

12 24 The printer of claim 22 in which the pattern instruction
13 comprises an address, the method comprising at the printer
14 requesting an appropriate pattern from a server identified by the
15 address, and adding the pattern received in response to the request
16 to the document bitmap

17

18 25. The printer of claim 22 in which the print instructions include a
19 plurality of pattern instructions which each indicate the location of at
20 least one position identification marking in the document, the printer
21 generating the pattern marking to be provided at the indicated
22 location independent of the content of the print instructions.

23

24 26. A printing application which is arranged to receive a file
25 defining a document to be printed and to produce a set of print
26 instructions which comprise instructions that define the content of the
27 document to be printed and at least one pattern instruction which
28 when interpreted by a printer causes the printer to provide a position
29 indication marking pattern on the printed document.

30

1 27. The printing application of claim 26 in which the print
2 instructions include at least one pattern instruction that comprises a
3 pattern ID.

4

5 28 The printing application of claim 26 in which the pattern
6 instruction comprises a network address of a processor which can
7 supply pattern to the printer.

8

9 29. The printing application of claim 26 in which the pattern
10 instructions include a plurality of pattern instructions which each
11 indicate the location of at least one position identification marking in
12 the document without indicating the appearance of the marking at
13 each location, the instructions being provided in a language that can
14 be interpreted by a printer.

15

16 30. The application of claim 26 which comprises a printer driver or
17 a filter which receives a file containing program instructions defining
18 a document from a document processing application and passes the
19 instructions to a printer driver after having added the pattern
20 instructions to the file.

21

22 31. The printing application of any one of claims 26 to claim 30 which
23 is adapted to generate a set of different patterns or portions of
24 pattern and to produce a set of different copies of an original
25 document by combining the content with one of the set of different
26 patterns.

27

28 32. A method of printing a document comprising:
29 receiving a set of print instructions defining the content of a
30 document;

1 generating a set of different patterns of position identification
2 markings; and

3 printing a plurality of copies of the document in which each printed
4 copy comprises both the content and one of the patterns of the set.

5

6 33. Apparatus arranged to produce multiple copies of a source
7 document comprising:

8 receiving means for receiving a set of print instructions defining the
9 content of the source document;

10 processing means for generating a set of different patterns or
11 portions of pattern; and

12 printing means for printing a plurality of copies of the source
13 document in which each printed copy comprises both the content of
14 the source document and one of the patterns of the set.

15

16 34. The apparatus of claim 33 which comprises a printer in which
17 the processing means for adding pattern resides at the printer.

18

19 35. Apparatus according to claim 33 in which the processing
20 means for adding pattern comprises a computer program which
21 resides on a host computer connected to the printing means.

22

23 36. Apparatus according to claim 35 in which the computer
24 program comprises a printer driver

25

26 37. Apparatus according to claim 33 which comprises a
27 photocopier which further includes:

28 i) an optical scanner for scanning the source document and
29 producing output signals representing an image of the source
30 document;

1 i) in which the means comprises an image processor for performing
2 at least one processing step on the output signals produced by the
3 scanner to produce modified signals representing a modified image
4 of the scanned document; and
5 iii) in which the printer is responsive to the modified image signals for
6 printing a modified image represented by the modified image signals;
7 and wherein the processing step performed by the processor
8 comprises embedding a pattern of positional markings within the
9 image of the scanned document which markings can be detected by
10 a suitable detection system and used to distinguish different
11 positions on the documents.

12

13

14 38. A photocopier comprising:

15 i) an optical scanner for scanning a document and producing output
16 signals representing an image of the scanned document;
17 ii) an image processor for performing at least one processing step on
18 the output signals produced by the scanner to produce modified
19 signals representing a modified image of the scanned document; and
20 iii) a printer responsive to the modified image signals for printing a
21 modified image represented by the modified image signals;
22 and wherein the processing step performed by the processor
23 comprises embedding a pattern of positional markings within the
24 image of the scanned document which markings can be detected by
25 a suitable detection system and used to distinguish different
26 positions on the documents.

27

28 39. The photocopier of claim 38 in which the photocopier applies a
29 pattern of markings which comprises a portion of pattern selected
30 from a larger pattern space, the selected portion being dependent
31 upon the identity of the photocopier.

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2 40. The photocopier of claim 38 or claim 39 in which the
3 photocopier is adapted to generate a different pattern for each copy
4 that is made of a single source document, or a unique pattern for
5 each copy it makes of any document.

6

7 41. The photocopier of claim 38,39 or 40 in which the photocopier
8 includes a network connection that enables the photocopier to
9 request a pattern information from a remote device and receive the
10 requested pattern information from the remote device, the processor
11 embedding a pattern in accordance with the received pattern
12 information.

13

14 42. The photocopier of claim 41 in which the photocopier is further
15 adapted to transmit to the remote device an electronic copy of the
16 scanned document.

17

18 43. A controller for a photocopier comprising:
19 input means for receiving an input image from a scanner of the
20 photocopier;
21 output means for passing an output image to a printer of the
22 photocopier;
23 and a processing means which is adapted to modify the input image
24 to produce the output image by embedding a pattern of positional
25 markings within the image of the scanned document which markings
26 can be detected by a suitable detection system and used to
27 distinguish different positions on the documents.

28

29 44. A data carrier which carries program instructions which when
30 processed by a controller of a photocopier cause the controller to:
31 receive an input image from a scanner of the photocopier;

1 modify the input image to produce a modified image by embedding a
2 pattern of positional markings within the image of the scanned
3 document which markings can be detected by a suitable detection
4 system and used to distinguish different positions on the documents;
5 and
6 pass the output image to a printer of the photocopier.

7

8 45. A photocopier arranged to produce multiple copies of a source
9 document comprising:

10 i) an optical scanner for scanning a document and producing output
11 signals representing an image of the scanned document;
12 ii) an image processor for performing at least one processing step on
13 the output signals produced by the scanner to produce a set of
14 modified signals representing a plurality of modified images of the
15 scanned document, each modified image being unique with respect
16 to the other images in the set; and
17 iii) a printer responsive to the modified image signals for printing a
18 modified image represented by the modified image signals.

19

20 46. The photocopier of claim 45 wherein the processing step
21 performed by the processor comprises embedding a different pattern
22 of positional markings within each modified image of the set which
23 markings can be detected by a suitable detection system and used to
24 distinguish different positions on the documents.

25

26 47. A photocopier which is adapted to produce a plurality of
27 different, modified documents, from an original source document by
28 embedding identification information in each of the copies.

29

30 48. A photocopier according to claim 47 in which the embedded
31 information comprises one or more of:-

- 1 -A pattern of positional markings
- 2 - A bar code
- 3 - A serial number
- 4 -An identification marking.

5

6 49. A method of printing a document containing position
7 identification pattern markings stored on a host device by a printer
8 comprising at the host device:

9 generating a set of print instructions which comprise instructions that
10 define the content of the document to be printed and at least one
11 pattern instruction which indicates that a pattern is to be included in
12 the printed documents, the instructions being provided in a language
13 that can be interpreted by a printer;

14 sending the set of print instructions to a printer connected to the host
15 device;

16 and at the printer processing the print instructions to create the
17 document to be printed including a pattern identified by the at least
18 one pattern instruction.

19

20 50. A system for printing a document containing position
21 identification pattern markings comprising:

22 a printing application stored on a host device which is arranged to
23 receive a file defining the content of the document and to generate a
24 set of print instructions which comprise instructions that define the
25 content of the document to be printed and at least one pattern
26 instruction which indicates that a pattern is to be included in the
27 printed documents, and a printer which includes interpreting means
28 for interpreting the instructions provided in the set of print
29 instructions to produce the document to be printed including a
30 pattern identified by the at least one pattern instruction.

31

1 51 A photocopier arranged to produce multiple copies of a source
2 document comprising:

- 3 i) an optical scanner for scanning a document and producing output
4 signals representing an image of the scanned document;
5 ii) an image processor for performing at least one processing step on
6 the output signals produced by the scanner to produce a set of
7 modified signals representing a plurality of modified images of the
8 scanned document, each modified image being unique with respect
9 to the other images in the set; and
10 iii) a printer responsive to the modified image signals for printing a
11 modified image represented by the modified image signals.

12

13 52 The photocopier of claim 8 wherein the processing step
14 performed by the processor comprises embedding a different pattern
15 of positional markings within each modified image of the set which
16 markings can be detected by a suitable detection system and used
17 to distinguish different positions on the documents.

18

19 53. A method of printing a document containing position
20 identification pattern markings stored on a host device by a printer
21 comprising at the host device:

22 generating a set of print instructions which comprise instructions that
23 define the content of the document to be printed and a plurality of
24 pattern instructions which each indicate the location of at least one
25 position identification marking in the document, the instructions being
26 provided in a language that can be interpreted by a printer;
27 sending the set of print instructions to a printer connected to the host
28 device;
29 and at the printer processing the print instructions to produce a
30 bitmap image of the document to be printed including a pattern which
31 includes a plurality of position markings provided at the locations

1 indicated by the pattern instructions included in the set of print
2 instructions

3

4 54. A system for printing a document containing position
5 identification pattern markings comprising:

6 a printing application stored on a host device which is arranged to
7 receive a file defining the content of the document and to generate a
8 set of print instructions which comprise instructions that define the
9 content of the document to be printed and a plurality of pattern
10 instructions which each indicate the location of at least one position
11 identification marking in the document, the instructions being
12 provided in a language that can be interpreted by a printer; and a
13 printer which includes interpreting means for interpreting each of the
14 pattern instructions provided in the set of print instructions to
15 produce a bitmap image of a position identification marking to be
16 printed at a location indicated by the pattern instruction, the pattern
17 instructions being independent of the resolution of the printer.

18